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EXAMINER	
SHUMATE, ANTHONY R	

ART UNIT	PAPER NUMBER
1797	

NOTIFICATION DATE	DELIVERY MODE
08/17/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/594,592	ORESTI ET AL.	
	Examiner	Art Unit	
	ANTHONY SHUMATE	1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 May 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *15-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *15-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *26 May 2009* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The Amendment filed 26 May 2009 has been entered and fully considered.

2. Claims 1-14 were cancelled. Claims 15-18 are pending, of which claims 15, 16, 21, 22, and 24 were amended. The amendments of claims 15, 16, 21, 22, and 24 are supported by the originally filed disclosure.

3. The previous drawing objections are withdrawn in light of Applicant's amendments to the drawing and specification.

4. The previous claim objection is withdrawn in light of Applicant's amendments to the claims.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 15-26 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over SANDS et al. (US 4,778,443) in view of AAREBROT et al. (WO 2000/011313), HOLM (US 3,075,918) and LAGRONE (US 4,339,917).

For instant **claims 15-19**, SANDS et al. teaches at the abstract, column 6 lines 1-40, figure 1 and claim 1 delivering the gas/oil/water (fluid) from the offshore facility (field) to a high pressure gas/liquids separation stage.

Also for instant **claims 15-19**, SANDS et al. teaches at the abstract, column 6 lines 1-40, figure 1 and claim 1 where the gas/oil/water (fluid) is split into a gas phase substantially consisting of petroleum gases (light hydrocarbon).

Additionally for instant **claims 15-19**, SANDS et al. teaches at the abstract, column 3 lines 50-68, column 4 lines 34-45, column 6 lines 1-40, figure 1 and claim 1, oil/water (two liquid phases) one of which mainly consists of water, the other substantially of oil (hydrocarbon liquids).

In addition for instant **claims 15-19**, SANDS et al. does not teach delivering the light hydrocarbon gases, separated in the high pressure separation stage, to a reinjection gas compression unit having at least two compression stages. AAREBROT et al. teaches at page 1 lines 15-20, page 4 lines 1-30, figure 1, and figure 2 delivering oil associated gases (light hydrocarbon gases), to a reinjection gas compression unit having at least two compression stages (C_1-C_5). It would have been obvious to one having ordinary skill in the art at the time the invention was made to process the petroleum (oil) gas of SANDS et al. with the reinjection system of AAREBROT et al., in order to retain the pressure of the reservoir in order to facilitate the oil recovery as taught by AAREBROT et al. at page 1 lines 15-20.

Also for instant **claims 15-19**, SANDS et al. does not specifically teach delivering, **after heating**, the hydrocarbon liquid separated in the high pressure stage of separation to one or more further stages of gas/liquids separation operating at decreasing pressures. But for instant claim 15, SANDS et al. does

teach at the abstract, column 3 lines 50-68, column 4 lines 34-45, column 6 lines 1-40, figure 1 and claim 1, delivering the oil (hydrocarbon liquid) separated in the high pressure stage of separation to one or more further stages of gas/liquids separation operating at medium-pressure and low-pressure (decreasing pressures). It would have been obvious to one having ordinary skill in the art at the time the invention was made to heat the hydrocarbon liquid, since it was known in the art that heating of petroleum oil (hydrocarbon liquid) provides the benefit of causing the dissolved carbon dioxide to be desorbed from the petroleum oil to help in flashing off the carbon dioxide from the hydrocarbon oil as taught by HOLM at column 2 lines 35-50.

Furthermore for instant **claims 15-19**, SANDS et al. does teach at the abstract, column 3 lines 50-68, column 4 lines 34-45, column 6 lines 1-40, figure 1 and claim 1 where, in each stage, the oil and water with dissolved gas (liquid) is split into a gas phase essentially consisting of petroleum gases (light hydrocarbon), and oil/water (two liquid phases) one of which mainly consists of water, the other mainly of oil (hydrocarbon liquids).

What's more for instant **claims 15-19**, SANDS et al. does teach at the abstract, column 3 lines 50-68, column 4 lines 34-45, column 6 lines 1-40, figure 1 and claim 1 delivering to a centrifugal countercurrent liquid/liquid contactor (water treatment section) the water separated both in the first high pressure separation stage and in the medium-pressure and low-pressure (decreasing pressures) separation stages.

Still more for instant **claims 15-19**, SANDS et al. does teach at the abstract, column 3 lines 50-68, column 4 lines 34-45, column 6 lines 1-40, figure 1 and claim 1 delivering the petroleum gases (light hydrocarbon), which have been separated in the medium-pressure and low-pressure (decreasing pressure) separation stages to corresponding compression units (5 and 6) to recompress the gases.

As well for instant **claims 15-19**, SANDS et al. teaches at the abstract, column 3 lines 50-68, column 4 lines 34-45, column 6 lines 1-40, figure 1 and claim 1 using compressors (5 and 6) to compress gases, except SANDS et al. does not specifically teach **(1)** the ejector type of compressor, and **(2)** the compressed gas exiting from the one of a plurality of compression stages of the reinjection gas compression unit as a driving fluid of each single ejector. It would have been obvious to one having ordinary skill in the art at the time the invention was made to **(1)** use ejectors as the type of compressor, since LAGRONE teaches at column 1 lines 5-30 that such a modification would improve the suction capabilities of a fluid delivery system over other similar pumps (compressors).

Also for instant **claims 15-19**, LAGRONE teaches the technique at column 1 lines 45-68, column 2 lines 15-50 and figure 1 **(2)** the compressed gas exiting from a compression stage of the centrifugal pump (compression unit) as the fluid directed to (driving fluid) the ejector. Also, AAREBROT et al. teaches at page 1 lines 15-20, page 4 lines 1-30, figure 1, figure 2 using a reinjection gas

compression unit discussed above in order to retain the pressure of the reservoir in order to facilitate the oil recovery. Also, AAREBROT et al. teaches at the figures and page 2 lines 30-32 a plurality of compression stages (C_1-C_5) of the reinjection gas compression unit. Also, the (compression unit) taught by LAGRONE is similar to the compression unit taught by AAREBROT et al. Furthermore, AAREBROT et al. teaches at the abstract, page 1 lines 15-20, page 4 lines 1-30, figure 1, figure 2 the reinjection gas compression unit produces exhaust. It would have been obvious to one having ordinary skill in the art at the time the invention was made to combining the prior art elements according to the known technique taught by LAGRONE to the base device taught by SANDS et al. and AAREBROT et al. in order to provide the predictable result of improving the suction capability of a fluid delivery system as taught by LAGRONE at column 1 lines 15-25.

For instant **claim 20**, SANDS et al. does not teach wherein each stage of compression of the reinjection gas compression unit comprises at least a biphasic separator to remove liquid particles, a compressor, and a heat exchanger to cool the compressed gas. But, AAREBROT et al. teaches at the abstract, page 1 lines 15-20, page 4 lines 1-30, page 2 lines 25-32, figure 1, and figure 2 wherein each stage of compression (C_1-C_5) of the reinjection gas compression unit comprises at least a condensed water separator (biphasic separator to remove liquid particles)(U), a compressor (C_1-C_5), and a intercooler

(heat exchanger)(K_2-K_6) to cool the compressed gas. It would have been obvious to one having ordinary skill in the art at the time the invention was made to process the petroleum (oil) gas of SANDS et al. with the reinjection system of AAREBROT et al., in order to retain the pressure of the reservoir in order to facilitate the oil recovery as taught by AAREBROT et al. at page 1 lines 15-20.

For instant **claims 21 and 22**, SANDS et al. does not teach wherein **(1)** the compressed gas to be used as driving fluid is taken after the compressor **(2)** and before the cooling heat exchanger. But, LAGRONE teaches the technique at column 1 lines 45-68, column 2 lines 15-50 and figure 1 wherein the compressed gas to be used as directed fluid (driving fluid) is taken after the centrifugal pump (compressor). AAREBROT et al. teaches at page 1 lines 15-20, page 4 lines 1-30, figure 1, figure 2 using a reinjection gas compression unit as discussed above for the obviousness to one of ordinary skill in the art of in order to retain the pressure of the reservoir in order to facilitate the oil recovery. Also, the (compression unit) taught by LAGRONE is similar to the compression unit taught by AAREBROT et al. Furthermore, AAREBROT et al. teaches at the abstract, page 1 lines 15-20, page 4 lines 1-30, figure 1, figure 2 the reinjection gas compression unit produces exhaust.

For instant **claims 21 and 22**, it would have been obvious to one having ordinary skill in the art at the time the invention was made to combining the prior art elements according to the known technique taught by LAGRONE to the base

device taught by SANDS et al. and AAREBROT et al. in order to provide the predictable result of improving the suction capability of a fluid delivery system as taught by LAGRONE at column 1 lines 15-25.

For instant **claims 21 and 22,** it would have been obvious to one having ordinary skill in the art at the time invention was made to wherein the compressed gas to be used as driving fluid is taken after the compressor **(2)** before the cooling heat exchanger, since it has been held that rearranging parts of an invention involves only routine skill in the art. (MPEP 2144.04 VI-C)

For instant **claim 23,** SANDS et al. does not teach wherein the reinjection gas compression unit includes three compression stages. But, AAREBROT et al. teaches at the abstract, page 1 lines 15-20, page 4 lines 1-30, page 2 lines 25-32, figure 1, and figure 2 wherein the reinjection gas compression unit includes three compression stages (C_1-C_3). It would have been obvious to one having ordinary skill in the art at the time the invention was made to process the petroleum (oil) gas of SANDS et al. with the reinjection system of AAREBROT et al., in order to retain the pressure of the reservoir in order to facilitate the oil recovery as taught by AAREBROT et al. at page 1 lines 15-20.

For instant **claim 24,** SANDS et al. teaches at the abstract, column 3 lines 50-68, column 4 lines 34-45, column 6 lines 1-40, figure 1 and claim 1 wherein the last stage of separation at decreasing pressures is performed at 450 kPa

(pressure). SANDS et al. does not teach the last stage of separation at decreasing pressures is performed at sub-atmospheric pressure. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the last stage of separation at decreasing pressures is performed at sub-atmospheric pressure, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. (MPEP 2144.05 PART II-A)

For instant **claim 25**, SANDS et al. teaches at the abstract, column 3 lines 50-68, column 4 lines 34-45, column 6 lines 1-40, figure 1 and claim 1 wherein the recompressed gases exiting from the compression units (5 and 6) are used as petroleum gas to a pipeline (fuel gases).

For instant **claim 26**, SANDS et al. does not teach wherein the recompressed gases exiting the compression units are sent to the reinjection gas compression unit. AAREBROT et al. teaches at page 1 lines 15-20, page 4 lines 1-30, figure 1, and figure 2 delivering oil associated gases (light hydrocarbon gases), to a reinjection gas compression unit having at least two compression stages (C_1-C_5). It would have been obvious to one having ordinary skill in the art at the time the invention was made to process the petroleum (oil) gas of SANDS et al. with the reinjection system of AAREBROT et al., in order to retain the

pressure of the reservoir in order to facilitate the oil recovery as taught by AAREBROT et al. at page 1 lines 15-20.

For instant **claim 28**, SANDS et al. teaches at the abstract, column 3 lines 50-68, column 4 lines 34-45, column 6 lines 1-40, figure 1, claim 1 and claim 13 the system is performed in a floating production unit.

7. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over SANDS et al. (US 4,778,443) in view of AAREBROT et al. (WO 2000/011313) and LAGRONE (US 4,339,917).

For instant **claim 27**, SANDS et al. teaches at the abstract, column 3 lines 50-68, column 4 lines 34-45, column 6 lines 1-40, figure 1, claim 1 and claim 13 a treatment system for gas/oil/water (fluid) originating from an oil field, a high pressure separator and at least a second lower pressure (medium-pressure) separator.

For instant **claim 27**, SANDS et al. teaches at the abstract, column 3 lines 50-68, column 4 lines 34-45, column 6 lines 1-40, figure 1, claim 1 and claim 13 petroleum (oil) associated gases. Except, SANDS et al. does not teach one reinjection gas compression unit having at least two compression stages. But, AAREBROT et al. teaches at page 1 lines 15-20, page 4 lines 1-30, figure 1, and figure 2 delivering oil associated gases (light hydrocarbon gases), to a reinjection gas compression unit having at least two compression stages (C_1-C_5). It would

have been obvious to one having ordinary skill in the art at the time the invention was made to process the petroleum (oil) gas of SANDS et al. with the reinjection system of AAREBROT et al., in order to retain the pressure of the reservoir in order to facilitate the oil recovery as taught by AAREBROT et al. at page 1 lines 15-20.

For instant **claim 27**, SANDS et al. does teach at the abstract, column 3 lines 50-68, column 4 lines 34-45, column 6 lines 1-40, figure 1, claim 1 and claim 13 at least a compression unit (5 and 6). For instant **claim 27**, SANDS et al. does not teach at least a compression unit equipped with a suitable ejector. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use ejectors as the type of compressor, since LAGRONE teaches at column 1 lines 5-30 that such a modification would improve the suction capabilities of a fluid delivery system over other similar pumps (compressors).

Response to Arguments

8. Applicant's arguments filed 26 May 2009 have been fully considered but they are not persuasive.

9. Applicant argues at page 9 paragraph 2 – page 10 paragraph 1 that LAGRONE is nonanalogous prior art with SANDS et al. AAREBROT et al. and HOLM. Respectively, the Examiner does not find the Applicants argument persuasive.

LAGRONE only mentions aircrafts once, and that is in the "Background of the Invention," section. LAGRONE describes in this section, "In many applications of gas turbine engines, such as those utilized on aircraft, it is important that the fuel delivery system be able to draw fuel from a low pressure reservoir at relatively high vapor-to-liquid ratios." This description by LAGRONE suggests **many applications** of the gas turbine engines besides the suggestion of the utilization of the gas turbine engines in aircraft. (emphasis added) Furthermore, an analogy between LAGRONE, SANDS et al. and AAREBROT et al. has already been set forth in the rejection with motivation to combine.

10. Applicant argues at page 10 paragraphs 2 and 3 and page 11 paragraphs 2 and 3 that LAGRONE fails to teach or suggest a gas driving the ejector. The Examiner respectively disagrees. First, the Applicant at page 10 paragraph 2 paraphrased the Office Action, and did not quote the Office Action. Second, the Examiner also notes the Applicant describing that, "Lagrone using an ejector 30 to take low pressure fuel (i.e., liquid from reservoir 24) in increase its pressure...Thus, Lagrone discloses a recycled liquid driving the ejector rather than a gas as recited in claim 15." The Examiner also respectively disagrees with such an assertion. LAGRONE teaches at column 3 lines 1-3 the fuel delivery system (10) draws fuel flow at a very high vapor-to-liquid ratios of up to 0.5 from reservoir (24) to inlet port (28) of the ejector pump. It is the Examiner's position that the vapor-to-liquid ratio of LAGRONE is a gas-to-liquid ratio.

11. Applicant argues at page 10 paragraph 4 - page 11 paragraph 1 that LAGRONE fails to teach or suggest different grades of gas entering the ejector. As described in the rejection AAREBROT et al. teaches the biphasic separator which the Applicant describes at page 10 paragraph 4 as having different grades of gas. And as described in the rejection, LAGRONE teaches the ejector. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Conclusion

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANTHONY SHUMATE whose telephone number is (571)270-5546. The examiner can normally be reached on M-Th 9-4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duane Smith can be reached on (571)272-1166. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/A.S./
Examiner Art Unit 1797

/Jason M. Greene/
Primary Examiner, Art Unit 1797